MEDICINE

Lump in Throat Rarely Means Tumor

➤ THE SYMPTOMS of "a lump in the throat" often comes from emotional disturbance. Globus hystericus is the technical name for the sensation of choking, frequently seen in hysteria. Only rarely does the symptom indicate a tumor.

A total of 207 patients studied showed no sign of an organic disease, although Dr. H. B. Lockhart of Vancouver, B. C., Canada, who made the study, said the possibility of tumor should not be ruled out in diagnosing such cases.

The patients selected for study were followed for at least 12 months, and nearly 90% appeared to respond to reassurance and "superficial psychotherapy," the physician said.

Dr. Lockhart described a typical case of globus hystericus as that of a female patient. (The ratio in his study was two women to one man complaining of a lump in the throat.)

"The patient is usually not able to localize the lump too accurately," Dr. Lockhart reported in the Canadian Medical Association Journal, 84:316, 1961. "She is about 40 years of age, tense and unduly concerned about 'a lump' she has had in her throat for several months (average 6.3 months)."

The "lump" is worse when "she is tired and most noticeable while she is swallowing saliva."

A thorough examination fails to reveal any significant abnormality and very frequently the patients admit that they have been associated in some way with a person who has or had a malignant tumor.

Many admitted that improvement began as soon as they realized there was nothing seriously wrong. One woman claimed that her symptoms disappeared when she stopped eating onions, and other "unusual explanations" by male patients included the use of gasoline in a cigarette lighter and drinking some bad water.

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SOCIOLOGY

Life Found in Space May Affect Religious Ideas

➤ IF LIFE is ever discovered in space by radio messages or direct exploration, religious leaders will be in for a shock, a social scientist, Dr. Donald N. Michael of the Brookings Institution, Washington, D.C., predicted at the Seagram Symposium devoted to "Life in Other Worlds" in New York.

If another world proves to be inhabited, Dr. Michael suggested that its inhabitants may be completely indifferent to communications with people on earth because of their differences in motives, behavior and perceptions.

Religious ideas on life may be affected by discovery of other life in space, Dr. Michael predicted.

Astronomers are pessimistic about life on other of the sun's planets more advanced than possibly lowly mosses on Mars. Dr. Harlow Shapley, Harvard University astronomer, told the symposium that except for the earth, the solar system is essentially sterile biologically. There are no men on Mars. If communications were established with Mars, Dr. Shapley said, "it should be one lowly moss talking to another."

Many of the billions of planets in the observable universe may well support living organisms, Dr. Otto Struve, director of the National Radio Astronomy Observatory, Green Bank, W. Va., told the meeting. But it is quite uncertain, he said, whether any intelligent beings are trying to contact us by radio signals, although Dr. Struve has directed a project that has listened for such signals.

The new world that it is now most urgent for us to make contact with are "the spiritual worlds within ourselves," Dr. Arnold J. Toynbee, the British historian, declared.

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TECHNOLOGY

Studying Odors Helps Designers of Vehicles

➤ INVESTIGATORS of the human nose have produced a novel aid to designers of ships, aircraft and other vehicles: an electrical way of making fields of flow visible.

Walter Pitts and Bradford Howland of the research laboratory of electronics at Massachusetts Institute of Technology, Cambridge, Mass., developed the apparatus during studies of olfactory stimulation. Their apparatus enables engineers to see, photograph and measure turbulence caused by a wing, a cylinder or whatever else engineers wish to study.

The builders had set out to devise a model of what happens in the human nose when chemical information is turned into electrical information for transmission to the brain. During this effort, they looked into electrochemical effects of fluid motion past an electrode.

Luminescent chemicals have long been known. By placing such chemicals in a solution and moving an anode through it, or permitting the solution to flow past an anode, it was found that some of these chemicals can be triggered into glowing. The anode can be given any desired shape.

Mr. Howland has obtained such impressive pictures of fluid motion that artists as well as engineers are interested in his technique.

Other methods of making fluid motion visible have been developed, but this one is advantageous in some research because the luminescence begins right at the surface of the electrode, its extension into the wake can be controlled by varying the contents of the fluid and the voltage in the circuit.

Development of the method was supported in part by Bell Telephone Laboratories, Inc., the National Institutes of Health and the Teagle Foundation, Inc., according to The Technology Review, published by MIT.

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IN SCIEN

MEDICINE

Lack of Enzyme Produces New Muscle Disease

➤ WHEN NATURE FAILS to provide human muscles with a particular enzyme, weakness and cramps result.

This condition has been recognized as a new muscle disease by Dr. Carl M. Pearson of the University of California, Los Angeles, Medical School. The disease is the result of the absence of phosphorylase, which is important in the chemical process of producing muscle energy.

The disease was discovered in a 19-year-old male who had a lifelong history of progressive weakness upon using exercised muscles, and severe cramps if exertion was intense or prolonged. During normal walking he experienced no difficulty. The patient was not aware of having any disease, and merely attributed his reactions to "being out of condition."

Apparently nature did not include the phosphorylase enzyme in the skeletal muscle of the patient because of some faulty genetic mechanism. The enzyme, which varies somewhat in different types of tissue, is presumably present in the patient's liver, and possibly heart and types of tissue other than skeletal muscles.

At present there is no specific treatment for the disorder. The patient is able to carry out normal activity, and his physician is hopeful of preventing permanent damage from long-term effects of the metabolic defect.

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BOTANY

Prairie Fire Heats Little Below Ground

➤ THE HEAT of a prairie fire may reach a temperature well into the 1,000-degree Fahrenheit range a few feet above the ground, but there may be no heating at all an inch or two below the surface of the ground.

Tests by Richard Vogl and Prof. John T. Curtis, University of Wisconsin botanists, showed that during burning, temperatures may often rise to 325 degrees at four inches above the ground, but they seldom reach more than 150 degrees a half inch below the surface, 60 degrees at an inch below, and show no appreciable increase at two inches below. The men used special pyrometers in their tests.

A backfire, creeping slowly against the wind, heats the ground the most, while a headfire sweeping with the wind heats it but little, the two researchers found. In the case of a headfire, peak intensity of the temperature is found at heights of 18 inches or more above ground.

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CE FIELDS

PHYSIOLOGY

Research With Squirrels Backs Theory of Seeing

➤ RESEARCH WITH the antelope ground squirrel has helped support the theory that it is impossible to gaze steadily at anything and that humans see only when visual cells are in motion.

Dr. Frederick Crescitelli, zoologist at the University of California, Los Angeles, has been studying this apparent visual cell motion in reference to the image on that part of the eye known as the retina.

The antelope ground squirrel has only the type of visual cells (cones) used in daylight vision. It does not possess rods, the visual cells that adapt to dim light and enable humans to see at night. Conseqently, the squirrel stays in its hole at night.

By means of a special apparatus, Dr. Crescitelli was able to trace the electrical signals initiated when light strikes the visual cells and is transmitted as impulses to the portion of the brain (cortex) concerned with vision.

There are two types of signals: 1, an "on" impulse generated when the light beam is on a particular cell, and 2, an "off" impulse which occurs when the cell shifts away from the light.

"On" and "off" signals for white and colored light were detected in both the retina and cortex of the squirrel. The pattern of signals suggested an important role in vision for the involuntary motion of the visual cells.

Thus the theory of the importance of visual cell motion in the seeing process was supported.

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MEDICINE

Horse Lung Study May Aid Human Disease Probe

➤ THE STUDY of emphysema, an incurable respiratory disease, may be helped by the fact that the horse lung closely resembles that of man.

In the past, experiments may have been unsuccessful in producing emphysema in commonly used animals because the animals do not possess lungs anatomically similar to those of man. Also they do not get the disease in a form similar to that found in human beings. Horses do develop emphysema.

Three scientists have studied the lungs of the cow, pig, lamb, dog, cat and monkey, as well as those of the horse, and found the horse to be the only animal with lungs anatomically similar to those of man.

Emphysema is characterized by enlarged air sacs in the lung, a condition that causes breathing difficulty. A significant finding was that only in the lung of man and the horse does the bronchial artery provide blood directly to the air sacs. This lends strong but indirect support to the theory that emphysema can result from disease of the bronchial artery, the investigators said.

Using this theory as a basis for experimentation, the scientists produced a condition in a normal horse that was identical both to naturally occurring equine and human emphysema. But they cautioned that a great deal more investigation is required to confirm their theory.

The scientists who made the study are Dr. Richard F. McLaughlin Jr., University of California Medical Center, San Francisco; Dr. Walter S. Tyler, School of Veterinary Medicine, University of California, Davis, Calif., and Capt. Robert O. Canada, U. S. Naval Hospital, Bethesda, Md. Their findings were reported in the Journal of the American Medical Association, 175:694, 1961.

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GENERAL SCIENCE

Praises Unorthodox Scientific Ideas

➤ "UNORTHODOX" scientific ideas or theories have frequently produced significant advances in the scientific world, Dr. Lawrence A. Wood, president of the Washington Academy of Sciences, said in Washington, D. C.

However, many of these theories were not readily accepted by the scientific world. Many scientists with unorthodox theories were forced to overcome strong opposition from scientists who vainly clung to conflicting opinions accepted at that time.

All the now generally accepted scientific theories had to face certain tests before they were accepted by the scientific community, Dr. Wood said.

In a historical survey of "unorthodox" ideas advanced by certain outstanding scientists, Dr. Wood noticed that four characteristics associated with successful theories usually appeared. Such scientists as Copernicus, Galileo and Louis Pasteur were "unorthodox," yet their scientific theories passed the tests.

The tests are, Dr. Woods said, that all experimental results be reproducible, reported, and supported by a theory. The theory must also be consistent with all the known facts. If an "unorthodox" idea can pass these tests, significant scientific progress will probably be made.

The human motives and personal factors involved in scientific work must not be underestimated. Scientists are human and cannot be expected readily to abandon a theory they hold, Dr. Wood said.

Galileo faced a heavy barrage of criticism when he contradicted Aristotle's dominance over scientific thinking during that time by denying that a heavy body necessarily falls faster than a light one. His dogged determination resulted in his famous ball dropping experiment from the Tower of Pisa.

This also established the modern scientific principle of verification by experiment.

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NUTRITION

Diseases Conquered By Enriched Bread

➤ AFTER 20 YEARS of bread enrichment, a wartime measure that is continuing, the deficiency diseases, pellagra and beriberi, have disappeared as public health problems, Dr. W. H. Sebrell Jr., director of Columbia University's Institute of Nutrition Sciences, reported in New York. He spoke at a dinner, sponsored by the American Bakers Association and the American Institute of Baking, honoring the use of enriched flour for two decades.

The deficiency diseases due to the inadequate intake of the three B vitamins, thiamine, niacin and riboflavin, were on the increase in the early thirties. Pellagra, due to niacin lack, numbered in the hundred thousands with deaths of about 7,000 in the peak year. There were thousands of cases of deficiency of riboflavin, necessary for normal eye and skin, and an increasing amount of beriberi heart disease due to lack of thiamine. These are rarities now that people get the B vitamins and iron in bread.

There is discussion today as to the desirability of adding the amino acid, lysine, to enriched bread to improve its protein value, Dr. Sebrell observed. Phosphorus, which may have value in inhibiting dental caries, might also be added to bread. Research of the future may show that vitamin B-6, and even vitamin B-12, should be added to the diet through bread.

When margarine fortified with vitamin A, vitamin D milk and some source of vitamin C are used along with the enriched bread carrying the B vitamins, a sound ration could be provided at minimum costs.

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AERONAUTICS

Pilot Error Blamed For Most Air Accidents

➤ PILOT ERROR causes or contributes to about 75% of general aviation accidents, James T. Pyle, acting administrator of the Federal Aviation Agency, said at a meeting of the Missouri Pilots Association in St. Louis.

"Pilots err most frequently in their judgment regarding weather and their inability to cope with it if caught in low visibility conditions," he said.

"Maximum safety and effectiveness of modern aircraft of all kinds requires that the pilot of the 1960's possess skills far in excess of the minimums prescribed by regulations," Mr. Pyle said. But "more regulation" is not the answer, he declared.

"What we need is more education," the Federal aviation administrator said. He said this could best be achieved by the pilots themselves through forums, seminars, and flying sessions through which they could exchange ideas and experiences aimed at improving flying.

Such meetings do not require an act of Congress or leadership by a Federal agency, Mr. Pyle emphasized, although "FAA is here to help."

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